

Stillwater Pasture Renovation Project – Site C, Year 1

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2019

County: Stillwater
Average annual precip: 15"
MLRA: 58A, Northern rolling plains
Dominant Soil Type: Tanna-Rentsac complex
Acres: 144
Planting Date: June 5, 2019
Seeding Rate: 22 lb/ac
Seed cost: \$12.10 /acre
Seeding Method: No-till drill
Row Spacing: 7.5"
Tillage: No-till
Previous Crop and Year: Crested wheatgrass pasture
Herbicides: 24 oz/ac glyphosate, June 1st
Post-emergence: None
Insecticides/Fungicides: Insecticide for grasshopper control, June 20
Fertilizer: None
Irrigation: Dryland
Termination Date: Sept 10th
Termination Method: Frost
Next Crop: Monoculture cover crop



Fig. 1. Sorghum-sudangrass cover crop, August 23, 2019.

Table 1. Monthly precipitation at Columbus, MT. Western Regional Climate Center, station #241938.

Columbus	J	F	M	A	M	J	J	A	S	O	N	D	Total
30 yr avg 1989-2019	0.61	0.67	1.08	1.85	2.69	2.27	1.18	0.93	1.31	0.93	0.64	0.57	14.99
2018	0.85	1.51	0.65	2.48	5.82	2.56	1.15	1.25	0.77	0.88	0.69	0.43	19.04
2019	0.59	1.45	0.51	2.83	3.60	2.65	2.88	0.72	5.01	1.87	0.73	0.14	22.98

Introduction:

Multiple pastures in Stillwater County are being converted from crested or intermediate wheatgrass monoculture to a more diverse perennial forage mix. Crested wheatgrass is killed with herbicide in the spring of Year 1. Annual cover crops are grown and grazed for two years to provide forage, allow for adequate kill of the wheatgrass, and to provide soil health benefits. Diverse perennial pasture mixes will be seeded in Year 3. This report gives results of Site C after the first year of annual cover crops. It should be noted that 2019 was a wet year, with close to 23 inches of total precipitation in Stillwater County, or 8 inches more than the 30-yr normal.

Results:

This site was sprayed with 24 oz/acre of glyphosate on June 1 to kill the existing pasture species. This timing provided an excellent kill of the crested wheatgrass. The producer chose to seed a single species cover crop of sorghum-sudangrass at a rate of 22 lb/ac on June 5. The cover crop was sampled on August 23 with three hoop clippings and air-dried before weighing. Total above ground biomass after air drying was 4,140 lb/acre, or 2.07 ton/acre. There were 2011 Growing Degree Days (base 40) from the June 5th seeding to the August 23rd clipping. Assuming 910 lbs of forage per animal month and 50% utilization rate on 144 acres, there were 327 AUMs available in this field.

Summary and Discussion:

The producer chose a single-species cover crop for multiple reasons. Grazing was not an option, as he does not have an adequate livestock water system developed. He wanted to maximize biomass production with a dense canopy to shade out weeds. In addition, he wanted to reserve the option of an in-crop broadleaf herbicide control if it was needed. In the end, an in-crop herbicide was not needed as this was a very clean stand of crested wheatgrass.

2019 was cool and wet, with close to 23 inches of total precipitation, or 8 inches more than the 30-year normal. The lack of warm weather in July slowed the growth of the sorghum-sudan. We think this species would work well in a normal precipitation year and with more heat units. Overall, we were pleased with the seeding rate and density. Because the weather was so cool, the grass grew slowly and couldn't out-compete a large grasshopper infestation. The producer sprayed for grasshoppers on June 20.

The producer did not add any fertilizer, however in the future we will be recommending all cover crop seedings for this project have supplemental N and P to improve nutrient cycling.

This field was growing well until a major hailstorm with 70 mph winds arrived on August 11. Even with all of these setbacks, the field still produced about 2 ton/ac of biomass. The sorghum-sudan frost killed in September and was hayed with a stubble height of 4 inches.



Fig. 2. Sorghum-sudangrass emerging, June 27, 2019 (l). Very little growth on July 10 due to cool temperatures (c). Sorghum-sudan on August 23 after a hailstorm 12 days prior. Stand still produced 2 ton/ac of growth (r).

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